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09/746,228	12/26/2000	Toshitaka Nakamura	N02-125045M/KOH	1148

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EXAMINER

MARKHAM, WESLEY D

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 02/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

T.D-5

Office Action Summary

Application No.

09/746,228

Applicant(s)

NAKAMURA ET AL.

Examiner

Wesley D Markham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 13 and 14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 6) ☐ Other:

DETAILED ACTION

Claims 1 – 14 are currently pending in U.S. Application Serial # 09/746,228, and an Office Action on the merits follows.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 – 12, drawn to a transparent laminate structure, classified in class 428, subclass 216.
 - II. Claims 13 – 14, drawn to a method for producing a transparent laminate structure by a vacuum dry process, classified in class 427, subclass 164.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made, respectively. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by a materially different process, such as depositing the thin films by a process that is not a "vacuum dry process", for example electroplating, dip coating, roll coating, spin coating, etc.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Sean McGinn on January 9, 2002, a provisional election was made with traverse to prosecute the invention of Group II, Claims 13 – 14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1 – 12 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

6. Acknowledgment is made of applicant's claim for foreign priority based on (1) an application filed in Japan on December 27, 1999, and (2) an application filed in Japan on December 18, 2000. It is noted, however, that applicant has not filed a certified copy of either application (i.e., JP 11-369355 or JP 2000-383072) as required by 35 U.S.C. 119(b).

Information Disclosure Statement

7. Acknowledgement is made of applicant's information disclosure statement, filed as paper #4 on March 7, 2001. However, no English language translation or abstract was received for document JP 55-11804 A. The only explanation of relevance

provided by the applicant regarding this document is the discussion of the document on page 3 of the applicant's specification as filed. As such, document JP 55-11804 A has only been considered to the limited extent of the discussion on page 3 of the applicant's specification.

Drawings

8. Acknowledgement is made of the 1 sheet of formal drawings submitted by the applicant on March 7, 2001.
9. The drawings are objected to because of the following informality. In Figure 3, the "REFLECTIVITY [%]" axis is not labeled with specific percentage values. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

10. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper (see page 1, lines 10 – 12 of the applicant's specification). If Japanese Patent Applications 11-369355 or 2000-383072 contain essential material, applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists

of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

11. The disclosure is objected to because of the following informalities:

- Page 10, line 21 – The word “surfacemar-proof” appears to be a typographical error. The applicant is suggested to change the word to read “surface mar-proof”.
- Pages 30 – 31, TABLES 1, 2, and 3 – It is unclear what units of measure are represented by “ Ω / \square ” in relation to surface resistance.
- Page 36, line 5 – It is unclear what units of measure are represented by “ Ω / \square ” in relation to surface resistance.
- Page 36, TABLE 4 – The category headings “Comparative Example” and “Visible Light Transmittance” appear to contain typographical errors. The applicant is suggested to amend the headings to read, “Comparative Example” and “Visible Light Transmittance”, respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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13. Claims 13 – 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
14. Specifically, the terms "high-refractive-index" and "thin film" in Claims 13 – 14 are relative terms which render the claims indefinite. The terms "high-refractive-index" and "thin film" are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For example, it is unclear what group of materials comprise "high-refractive-index" materials (i.e., how high is high), and what ranges of film thickness are encompassed by the limitation "thin film" (i.e., how thin is thin).
15. In addition, the term "silver transparent conductive thin film" in Claims 13 – 14 is also vague and indefinite. Specifically, in light of the applicant's specification, it is unclear whether the "silver" film limitation encompasses only films that are silver or films that comprise silver and any of a number of different additional components. For purposes of examination only, the examiner has broadly interpreted the limitation to include films that comprise silver and any of a number of additional components.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
18. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anzaki et al. (USPN 6,316,110 B1).
19. Regarding Claim 13, Anzaki et al. teach a method for producing a transparent laminate, specifically an electromagnetic wave filter for a plasma display panel (Abstract), the method comprising the steps of preparing a transparent substrate (Col.1, lines 5 – 15, Col.3, lines 10 – 11), depositing a transparent dielectric layer having a refractive index of up to 2.8 (i.e., a “high refractive index” film) on the substrate, depositing a silver transparent conductive thin film on the dielectric layer, repeating the aforementioned steps three times to obtain three combination thin film layers on the substrate, and depositing another transparent dielectric layer (i.e., “high refractive index” film) on the combination thin film layers (Col.3, lines 1 – 25,

Col.4, lines 14 – 40, Col.5, lines 1 – 9, Col.6, lines 8 – 12 and 45 – 55, and Figure 2). The layers are deposited by a “vacuum dry process” such as sputtering (Col.6, lines 13 – 29). Anzaki et al. do not explicitly teach that the temperature of the substrate at the time of deposition of the silver films is between 340 K and 410 K, inclusive. However, Anzaki et al. do teach heating the substrate to a temperature of 300° C (i.e., 573 K) or lower during the silver film formation (Col.6, lines 20 – 23). The teaching of Anzaki et al. of a substrate temperature of 300° C or lower overlaps the applicant's claimed temperature range. Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one of ordinary skill in the art to have selected the portion of Anzaki et al.'s temperature range that corresponds to the applicant's claimed range (*In re Malagari*, 184 USPQ 549 (CCPA 1974)).

20. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anzaki et al. (USPN 6,316,110 B1) in view of Noreika et al. (USPN 3,915,764) and either Nulman (USPN 5,754,297) or Shiroishi et al. (USPN 4,833,020).
21. Anzaki et al. teach all the limitations of Claim 14 as set forth in paragraph 19 above, except that (1) the temperature of substrate at the time of the deposition of the silver films is between 340 K and 390 K, inclusive, and (2) the deposition rate R (nm/sec) of the silver films is set to be $R = (1/40) \times (T - 300) \pm 0.5$. However, Anzaki et al. do teach heating the substrate to a temperature of 300° C (i.e., 573 K) or lower during the silver film formation (Col.6, lines 20 – 23). The teaching of Anzaki et al. of a

temperature of 300° C or lower overlaps the applicant's claimed temperature range. Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one of ordinary skill in the art to have selected the portion of Anzaki et al.'s temperature range that corresponds to the applicant's claimed range (*In re Malagari*, 184 USPQ 549 (CCPA 1974)). Anzaki et al. are silent as to the deposition rate of the silver films. However, Anzaki et al. are particularly concerned with the thickness of the silver films (Col.4, lines 15 – 40). Noreika et al. teach that, in the art of depositing films by a sputtering process (i.e., the process taught by Anzaki et al. to deposit the silver films), deposition rate is a controllable variable and is dependent on substrate temperature (Col.4, lines 43 – 53). Both Nulman and Shiroishi et al. teach that the deposition rate in a sputtering process is an important processing characteristic and can be determined experimentally (i.e., is a result / effective variable) (Col.3, lines 12 – 26 of Nulman, and Col.3, lines 14 – 16, 23 – 25, and 55 – 62 of Shiroishi et al.). Therefore, it would have been obvious to one of ordinary skill in the art to optimize the deposition rate as a result / effective variable in the silver film sputtering process of Anzaki et al. through routine experimentation with the reasonable expectation of (1) success, as Noreika et al. teach that deposition rate is a controllable variable in a sputtering process, and (2) obtaining the specific film thickness of each silver film as desired by Anzaki et al. Please note that the discovery of an optimum value of a result / effective variable is generally considered to be within the skill of the art (*In re Boesch*, 205 USPQ 215 (CCPA 1980)).

22. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al. (USPN 6,104,530) in view of Kenzo et al. (JP 09-176837 A).
23. Regarding Claim 13, Okamura et al. teach a method of producing a transparent laminate, specifically an optical filter (Abstract), the method comprising the steps of preparing a transparent substrate (Abstract), depositing a high refractive index transparent film, depositing a silver transparent conductive film on the high refractive index transparent film, repeating the aforementioned deposition steps three to six times to form three to six combination thin film layers on the substrate, and depositing another high-refractive index transparent film on the surface of the combination thin film layers (Abstract, Col.4, lines 38 – 54, Col.5, lines 1 – 5, Cols.6 – 7, Col.9, lines 18 – 67, Col.27, lines 6 – 67, Col.28, lines 1 – 14, and Figure 2). The layers are deposited by a “vacuum dry process” such as sputtering (Col.11, lines 45 – 67, and Col.12, lines 1 – 8). Okamura et al. do not explicitly teach that the substrate has a temperature of between 340 K and 410 K, inclusive, at the time of the deposition of the silver films. Specifically, Okamura et al. are silent as to the substrate temperature during the deposition of the silver films in the sputtering process of their invention. Kenzo et al. teach a similar method of forming a transparent laminate by sandwiching a silver layer between two high refractive index oxide layers (paragraphs [0011], [0018], and Figure 1). The layers are all formed by a sputtering process (i.e., the same process taught by Okamura et al. to form the layers) (paragraph [0022]). In addition, Kenzo et al. teach that the

sputtering process for forming all the layers (including the silver layer) is performed at a substrate temperature between room temperature and 180° C (paragraph [0022]). Therefore, it would have been obvious to one of ordinary skill in the art to choose the substrate temperature taught by Kenzo et al. (i.e., between room temperature and 180° C) when performing the silver film deposition process of Okamura et al. with the reasonable expectation of success (i.e., successfully depositing the silver film by sputtering as desired by Okamura et al. at an operable substrate temperature as taught by Kenzo et al.). In addition, the teaching of Kenzo et al. of a substrate temperature of between room temperature and 180° C overlaps the applicant's claimed temperature range. Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one of ordinary skill in the art to have selected the portion of Kenzo et al.'s temperature range that corresponds to the applicant's claimed range (*In re Malagari*, 184 USPQ 549 (CCPA 1974)).

24. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al. (USPN 6,104,530) in view of Kenzo et al. (JP 09-176837 A) in further view of Noreika et al. (USPN 3,915,764) and either Nulman (USPN 5,754,297) or Shiroishi et al. (USPN 4,833,020).
25. The combination of Okamura et al. and Kenzo et al. teach all the limitations of Claim 14 as set forth in paragraph 23 above, except that (1) the temperature of substrate at the time of the deposition of the silver films is between 340 K and 390 K,

inclusive, and (2) the deposition rate R (nm/sec) of the silver films is set to be $R = (1/40) \times (T - 300) \pm 0.5$. However, the teaching of Kenzo et al. of a substrate temperature of between room temperature and 180°C overlaps the applicant's claimed temperature range. Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one of ordinary skill in the art to have selected the portion of Kenzo et al.'s temperature range that corresponds to the applicant's claimed range (*In re Malagari*, 184 USPQ 549 (CCPA 1974)). Both Okamura et al. and Kenzo et al. are silent as to the deposition rate of the silver films. However, Okamura et al. are concerned with the thickness of the silver films (Col.10, lines 34 – 47). Noreika et al. teach that, in the art of depositing films by a sputtering process (i.e., the process taught by Okamura et al. to deposit the silver films), deposition rate is a controllable variable and is dependent on substrate temperature (Col.4, lines 43 – 53). Both Nulman and Shiroishi et al. teach that the deposition rate in a sputtering process is an important processing characteristic and can be determined experimentally (i.e., is a result / effective variable) (Col.3, lines 12 – 26 of Nulman, and Col.3, lines 14 – 16, 23 – 25, and 55 – 62 of Shiroishi et al.). Therefore, it would have been obvious to one of ordinary skill in the art to optimize the deposition rate as a result / effective variable in the silver film sputtering process of Okamura et al. through routine experimentation with the reasonable expectation of (1) success, as Noreika et al. teach that deposition rate is a controllable variable in a sputtering process, and (2) obtaining the specific film thickness of each silver film as desired by Okamura et al. Please note that the

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discovery of an optimum value of a result / effective variable is generally considered to be within the skill of the art (*In re Boesch*, 205 USPQ 215 (CCPA 1980)).

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kobayashi et al. (USPN 5,092,680) teach the importance of controlling the substrate temperature in a sputtering process (Col.8, lines 33 – 56).
27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.
28. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.
29. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham
Examiner
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WDM

January 30, 2002

WDM



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